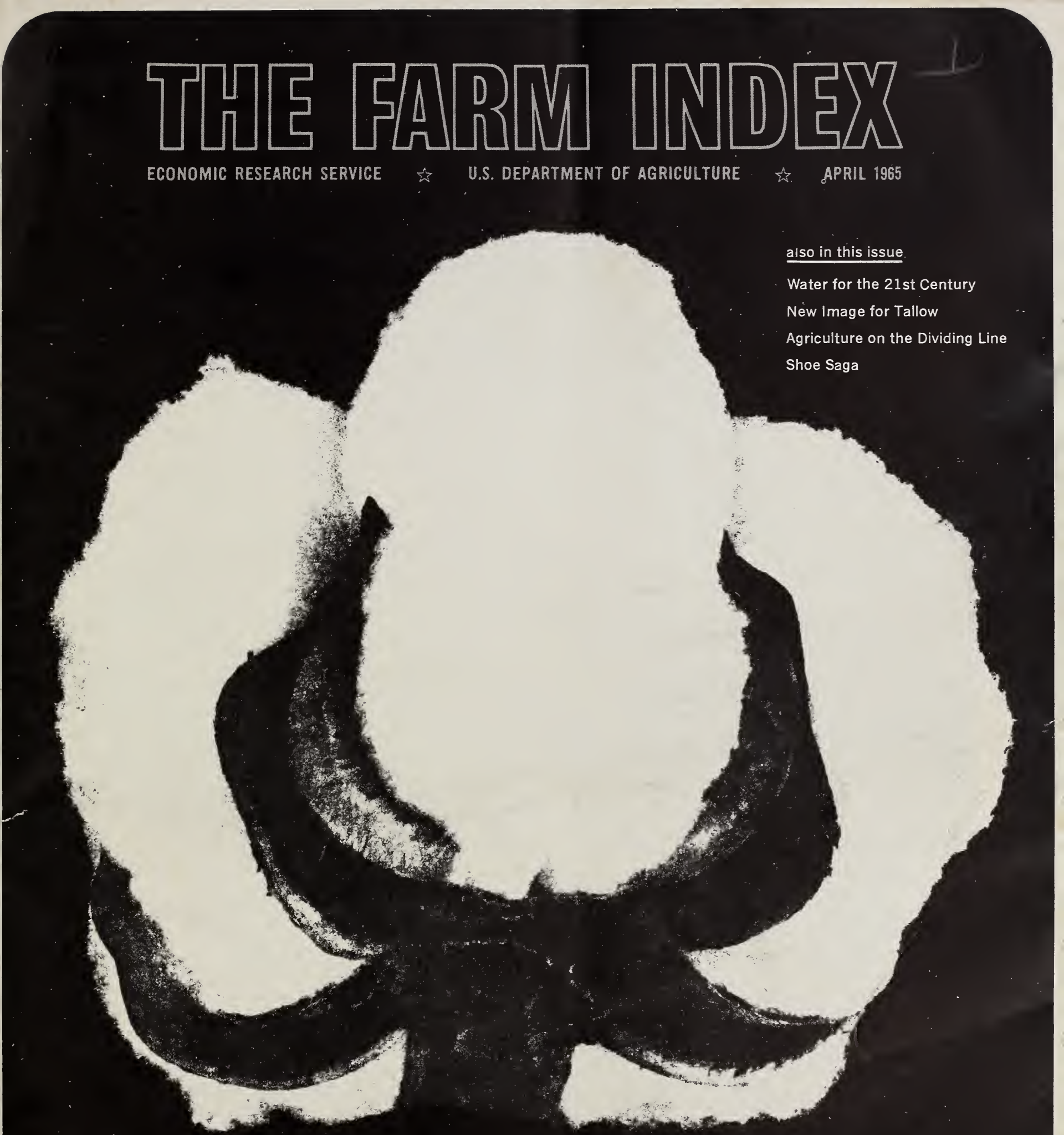
THE FARM INDEX

ECONOMIC RESEARCH SERVICE ☆ U.S. DEPARTMENT OF AGRICULTURE ☆ APRIL 1965



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Economic Trends

ITEM	UNIT OR BASE PERIOD	'57-'59 AVERAGE	1964 YEAR	1964 FEBRUARY	1964 DECEMBER	1965 JANUARY	1965 FEBRUARY
Prices:							
Prices received by farmers	1910-14 = 100	242	236	240	234	236	238
Crops	1910-14 = 100	238	237	242	234	233	235
Livestock and products	1910-14 = 100	258	235	237	234	238	240
Prices paid, interest, taxes and wage rates	1910-14 = 100	293	313	313	313	317	318
Family living items	1910-14 = 100	286	300	300	301	303	304
Production items	1910-14 = 100	262	270	271	270	272	273
Parity ratio		83	75	77	75	74	75
Wholesale prices, all commodities	1957-59 = 100	—	100.5	100.5	100.7	101.0	101.2
Commodities other than farm and food	1957-59 = 100	—	101.2	101.2	101.8	101.9	101.9
Farm products	1957-59 = 100	—	94.3	94.5	92.7	93.0	94.5
Food, processed	1957-59 = 100	—	101.0	100.9	100.8	102.2	102.0
Consumer price index, all items	1957-59 = 100	—	108.1	107.6	108.8	108.9	—
Food	1957-59 = 100	—	106.4	106.0	106.9	106.6	—
Farm Food Market Basket: [1]							
Retail cost	Dollars	983	1,015	1,012	1,020	1,016	—
Farm value	Dollars	388	373	368	375	379	—
Farm-retail spread	Dollars	595	642	644	645	637	—
Farmers' share of retail cost	Per cent	39	37	36	37	37	—
Farm Income:							
Volume of farm marketings	1957-59 = 100	—	118	89	137	127	89
Cash receipts from farm marketings	Million dollars	32,247	36,748	2,354	3,585	3,300	2,400
Crops	Million dollars	13,766	16,820	870	1,914	1,600	900
Livestock and products	Million dollars	18,481	19,928	1,484	1,671	1,700	1,500
Realized gross income [2]	Billion dollars	—	42.0	—	42.5	—	—
Farm production expenses [2]	Billion dollars	—	29.4	—	29.2	—	—
Realized net income [2]	Billion dollars	—	12.6	—	13.3	—	—
Agricultural Trade:							
Agricultural exports	Million dollars	4,105	6,347	523	669	—	—
Agricultural imports	Million dollars	3,977	4,082	295	371	175	—
Land Values:							
Average value per acre	1957-59 = 100	—	128 [3]	135 [4]	137 [5]	—	—
Total value of farm real estate	Billion dollars	—	148.7 [3]	154.9 [4]	157.8 [5]	—	—
Gross National Product [2]	Billion dollars	456.7	622.6	—	599.0	—	634.6
Consumption [2]	Billion dollars	297.3	399.3	—	381.3	—	406.5
Investment [2]	Billion dollars	65.1	87.7	—	87.1	—	90.4
Government expenditures [2]	Billion dollars	92.4	128.6	—	124.8	—	130.0
Net exports [2]	Billion dollars	1.8	7.0	—	5.8	—	7.7
Income and Spending: [6]							
Personal income, annual rate	Billion dollars	365.2	491.4	480.5	505.9	510.2	510.7
Total retail sales, monthly rate	Million dollars	17,105	21,748	21,533	22,781	22,881	23,015
Retail sales of food group, monthly rate	Million dollars	4,159	5,173	4,991	5,409	5,200	—
Employment and Wages: [6]							
Total civilian employment	Millions	64.9	70.4	69.8	71.0	71.3	71.3
Agricultural	Millions	6.0	4.8	4.8	4.5	4.5	4.6
Rate of unemployment	Per cent	5.5	5.2	5.4	5.0	4.8	5.0
Workweek in manufacturing	Hours	39.8	40.7	40.7	41.2	41.4	41.4
Hourly earnings in manufacturing, unadjusted	Dollars	2.12	2.54	2.51	2.58	2.59	2.59
Industrial Production [6]	1957-59 = 100	—	132	128	138	138	139
Manufacturers' Shipments and Inventories: [6]							
Total shipments, monthly rate	Million dollars	28,736	37,124	36,235	39,318	39,052	—
Total inventories, book value end of month	Million dollars	51,158	60,940	60,123	62,944	63,171	—
Total new orders, monthly rate	Million dollars	28,374	37,682	36,657	39,590	39,732	—

[1] Average annual quantities of farm food product purchases by urban wage-earner and clerical-worker households (including those of single workers living alone) in 1960-61—estimated monthly. [2] Annual rates seasonally adjusted fourth quarter. [3] As of November 1, 1963. [4] As of July 1. [5] As of November 1. [6] Seasonally adjusted.

Sources: U.S. Dept. of Agriculture (Farm Income Situation, Marketing and Transportation Situation, Agricultural Prices, Foreign Agricultural Trade and Farm Real Estate Market Developments); U.S. Dept. of Commerce (Industry Survey, Business News Reports, Advance Retail Sales Report and Survey of Current Business); and U.S. Dept. of Labor (The Labor Force and Wholesale Price Index).

During the past 50 years, the U.S. population grew some 90 per cent over all. The cattle population wasn't far behind—it went up 70 per cent to a new January 1 total of 107 million. Most of the increase occurred since 1940.

The change in the beef cattle segment was even more striking—numbers more than doubled during the last half century. Beef animals are now around 80 million. In contrast, January 1 numbers of other farm animals haven't grown.

Why such gains for beef cattle numbers? For one thing, increasing incomes have let the growing number of consumers include more relatively costly beef in their diets.

Credit also should be given to greater efficiency in producing beef. This has enabled a larger volume of the product to be sold, at an attractive price to consumers, with generally acceptable returns to producers.

The quality of beef has also been upgraded. Most beef 50 years ago was from low-grade steers just off the range; today, much of our beef is a higher grade of meat from grain-fattened cattle.

However, the changes in cattle numbers tell only part of the story. Despite a slump during the Depression, production of beef has gone up even more than cattle numbers, especially since World War II. Marked gains in feedlot output and size of calf crops accompanied the gain in production.

This combination of supply factors has enabled a fast rise in beef consumption per person: It now stands at about 100 pounds annually, up from a Depression low of 47 pounds and only about 65 pounds 20 years ago.

In contrast to the beef herd, sheep and hog numbers haven't gone along with the increasing population trend. In fact, January 1 numbers have dropped. However, for sheep and hogs, as for cattle, inventories vastly understate increases in meat production.

The January 1 hog population 50 years ago was about 60 million. That probably was a rough guide to annual slaughter then, since in many areas there used to be only one pig crop each year.

The hog count this January 1 was down to 53 million. But two pig crops a year are now common and more of the animal is pork. At the turn of the century, much of a hog was lard. So, annual slaughter nowadays is more than half again the January 1 count—and more of it is meat.

Accordingly, pork production has about matched gains in the consuming population, leaving per capita consumption today nearly the same as the 65 pounds a half century ago.

Sheep numbers have trailed off as producers have found more profitable enterprises. Numbers January 1 were down to less than 27 million from over 40 million in the early 1900s. And there is still only one lamb crop a year, although production efficiency has gone up. Meanwhile, mutton and lamb consumption per person has dropped from six pounds to less than five pounds.

Another competitor

A newer element in meat competition is broilers—commercial production is mostly a postwar development.

The rate of chicken consumption has gone up even faster than beef—from just about 14 pounds (ready-to-cook) per person in the early 1900s to over 30 pounds currently.

Again, like livestock numbers, the January 1 chicken count isn't a guide to annual meat output; it is more representative of the egg-laying flock. The 377 million chickens on farms the first of this year, about the same as the number 50 years ago, masks a revolution in broiler

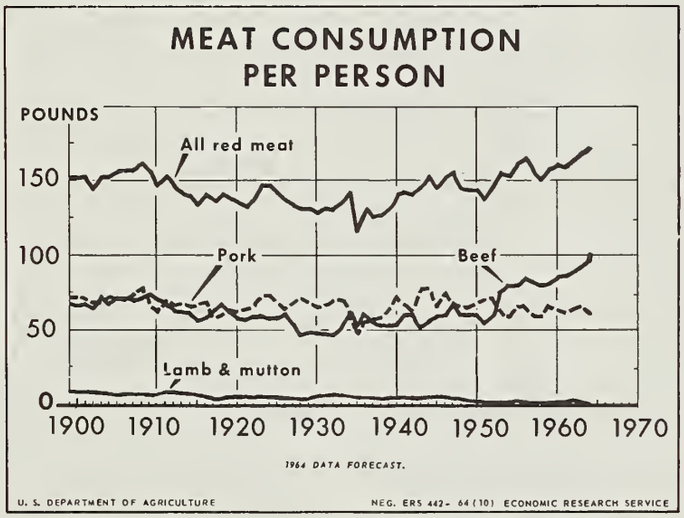
the agricultural outlook

production in recent years.

Production of chickens for meat has changed from a sideline to the egg-laying flock to a big business, and efficiency has sky-rocketed. Chickens go from egg to drumstick in three months now, half as long as it used to take, and on little more than half the feed.

Why consumption patterns change

Why have production and consumption of beef and chicken gone up so much, leaving pork and mutton and lamb behind?



Answers are many, debatable and highly qualified because there are so many aspects and some are hard to analyze with certainty. Much research has been done on some phases.

Two rather obvious factors are productivity on the supply side and consumer income on the demand side.

Productivity: Most of the recent gains in beef productivity arose from shifts in management practices; shorter feeding periods; a giant increase in feedlot fattening—thanks to the increasing availability of grains; and a higher calving rate.

Some of the rise in the efficiency of chicken meat output is due to production line management. However, much progress has also been made in boosting the genetic capabilities of birds to gain weight and in supplying tailor-made rations.

Consumer income: Much of the rise in meat use per person in recent years has been attributed to increasing incomes. These have also led to changes in the mixture of meat products in our diets—particularly, more beef relative to pork.

Price, of course, acts as the signal to the meat producer on how consumers are reacting to changes in supply conditions and expanding technology; it helps farmers decide how to reallocate their resources.

Price also signals the consumer on how producers are reacting to his changing income and demand conditions; it helps him decide how to allocate his income among food products.

Other things also affect supply-demand relationships:

—The change from physical labor to more sedentary work is cited as a factor affecting meat consumption—more meat relative to starchy foods, more lean meat relative to fat and more beef relative to pork.

—Changes in the makeup of the consuming population are very important. Today a higher percentage live in households than was true 50 years ago. There are more working wives, teenagers and city dwellers. Population shifts among geographical regions also influence consumption patterns.

A shift to convenience foods, the trend toward eating out more often and gains in product quality, refrigeration, meat promotion and grading standards have had their effect on meat consumption, too.

Answers needed

Looking ahead, what further effects will these trends and factors have on meat consumption and competition among meats?

Farm groups, industry leaders and economists have pondered the question. Answers on some of the aspects can be supplied. Others await more thorough investigation. Obviously—and here we bring in the classic statement on scientific study—more research is needed.

Meanwhile, projections of consumption per person during the next few years, based on current prices, envision continued gains for beef and chicken and declines for pork and lamb.

close-up on

COTTON

SUBTRACT ROWS, ADD TO YIELDS

Mississippi study indicates skip-rows increase output per acre as much as 77 per cent over planting fields solid

A cotton farmer generally knows his limitations. He has x number of acres to farm with n number allotted to cotton. He aims to make as much money as he can from his land.

Even though the Mississippi Agricultural Experiment Station had demonstrated that skip-row planting of cotton would increase yields, farmers didn't adopt the practice initially because cotton allotment regulations required the skips to be counted as part of the allotted acreage. When the rules were changed in 1962, exempting the fallowed rows from the allotment, the practice caught on.

Now, farmers need some facts and figures on how much skip-row planting costs and how much it returns in net income. They also need to know how to combine skip-row cotton with their other farm enterprises.

Researchers with the Delta Experiment Station, in cooperation with ERS, set out to find some answers on the economics of skip-row planting. From cotton farmers in the Delta area they obtained information on yields, production practices and changes in equipment for four skip-row patterns and four soil groups during the 1962 and 1963 crop seasons. The soil types included were sandy, loam, well-drained clay and poorly-drained clay.

Skip-row patterns considered were two-by-two (two rows planted, two fallowed), two-by-one, four-by-four on sandy and loam soils, and four-by-four on clay soils. A two-by-two pattern, for example, requires two acres of land for one acre of cotton.

Whether or not a soil type is suited for skip-row cotton depends on the size of the plant stalk that the soil will produce. Sandy soils usually grow large stalks capable of carrying many bolls. Poorly-drained clays produce small stalks. Loams and well-drained clays are in between.

A two-by-two pattern on sandy soils gave the largest gain in yield. Yields per planted acre increased from 46 to 77 per cent over solid plantings.

A two-by-two system also resulted in the greatest change in yields on loam soils. Gains over planting solid ranged from 35 to 54 per cent.

A four-by-four pattern was the only one planted to any extent on clay soils. In 1963, yields were from 8 to 49 per cent greater.

Obviously, skip-row planting does result in more cotton per acre planted. But, it also increases production costs. Additional land must be tilled. More time and equipment are required. Weeds must be controlled in the skips as well as in the rows.

Cotton growers in the Yazoo-Mississippi Delta have had a good deal of trouble adapting their machinery to skip-row planting. Most use two-row planters which means farmers can't plant fast enough on extensive acreages and costs are higher, too. A few farmers have tried using a six-row planter with the two center hoppers empty.

When all the additional production expenses for skip-row planting were figured, the two-by-two system came out with the highest extra cost. Four-by-four added the least extra cost. However, the two-by-two pattern resulted in the highest net returns per acre because yields were larger.

After costs and returns were determined for skip-row cotton,

COMPARISONS OF COSTS AND RETURNS FOR SOLID AND SKIP-ROW COTTON

Planting systems	Costs per acre	Extra cost for skip-rows	Returns per acre for specified costs	Returns per acre above planting solid
		Dollars		
Sand				
Solid	136.86	—	113.75	—
2-by-2	188.09	51.23	226.05	92.30
2-by-1	173.74	36.88	191.42	57.67 [1]
4-by-4	167.36	30.50	195.05	61.30
Loam				
Solid	133.41	—	109.80	—
2-by-2	179.82	46.41	178.18	68.38
2-by-1	168.06	34.65	152.90	43.10 [1]
4-by-4	161.97	28.56	158.99	49.19
Clay [2]				
Solid	127.43	—	71.24	—
4-by-4	138.97	11.54	115.19	43.95

[1] Two-by-one plantings aren't directly comparable with two-by-two or four-by-four because only half as much fallowed land is required. When total land is considered, returns from a half-acre of soybeans should be included for two-by-one to make a reasonable comparison. Soybeans would add $20.31 to returns from solid planting for two-by-one on sand, and $20.78 on loam. The adjusted totals would be $77.98 and $63.88, respectively. [2] Only well-drained soils were considered.

the specialists fitted them into six typical farm organizations in a cotton - soybean rotation. The farms varied in the proportions of the four soil types considered.

Farm I had a high percentage of sandy soils. The most net profit was obtained by planting the entire cotton allotment on sandy soils in a two-by-two pattern. The remaining land was planted to soybeans.

Sixty-five per cent of the land on *Farm II* was suitable for skip-row cotton. However, the acreage wasn't enough to plant all the allotment in a two-by-two pattern. As a result, planting all the sand and most of the loam in two-by-one made the highest net income. The remaining loam was planted in two-by-two. All the clay was in soybeans.

About half of the land on *Farm III* was suitable for skip-row cotton. The most profitable organization had two-by-one cotton planted on all the sand and loam soils. Some additional cotton was planted solid on well-drained clay. All other land was in soybeans.

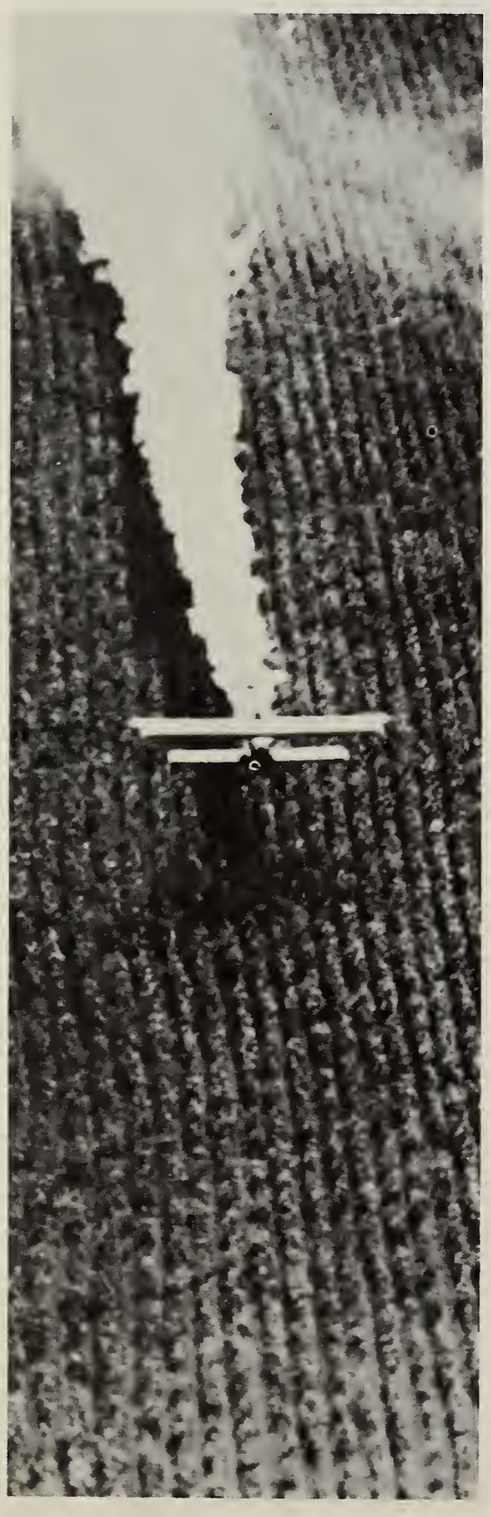
Sample *Farm IV* had only a small acreage of sand and loam soils. The most profit resulted when cotton was planted on all the sand and loam in a two-by-one pattern. Just under half of the well-drained clay was planted in four-by-four with the remainder in solid rows.

Only 35 per cent of the soils on *Farm V* were usable for skip-row cotton. In theory, a small amount of cotton could be planted as two-by-one on the sandy soils. In actual practice, all the cotton probably would be planted solid because the proposed skip-row acreage wouldn't justify changing machinery.

On *Farm VI,* skip-row cotton didn't pay off at all. In this case, part of the cotton would be on poorly-drained clay if the allotment was spread over more land. The most net income was in solid cotton on the sand and loam soils and soybeans on the clay. *(1)*

DEFOLIATION... FARMER'S BOON, PROCESSOR'S BANE

The cotton that's easy for the processor to card and comb isn't the cotton that the farmer defoliated to raise his grade and price.



The cotton production practices that pay off for the farmer are the ones that result in a quality of product that is most profitable under present pricing policies. Modern ginning equipment used to clean the cotton and thereby to improve the grade does not always result in qualities that the spinner wants. Researchers found this to be the case for the upland cotton grown in the El Paso area during the 1960-61 season.

The field and ginning practices most profitable for the farmer (in terms of 1960 and 1963 prices for lint) were normal defoliation, normal moisture levels and a minimum of cleaning. The cotton with the characteristics most needed for satisfactory processing—strong fibers with maximum length, length uniformity and maturity—was produced with no defoliation.

Defoliation was apparently most detrimental to fiber length and distribution. Specialists found that samples of defoliated lint were from $\frac{1}{32}$ to $\frac{1}{16}$ of an inch shorter than those from test plots which had not been defoliated. Defoliated lint contained a slightly higher percentage of short fibers, too.

The study of the effects of harvesting and ginning practices on the quality of cotton fibers was conducted on test plots of Acala 1517C, the predominant variety grown in the El Paso area in 1960. The research was carried out by the Agricultural Marketing Service and the Agricultural Research Service in cooperation with ERS.

There were three defoliation treatments. One-third of the field was given a premature treatment when only 10 per cent of the bolls were open. Another third was given a normal defoliation treatment when 60 per cent of the bolls were open, and the remaining third of the field was not defoliated. The first picking included 54 bales harvested by machine and six picked by hand. Nine bales were machine-picked in a second run over the same plots after frost had occurred.

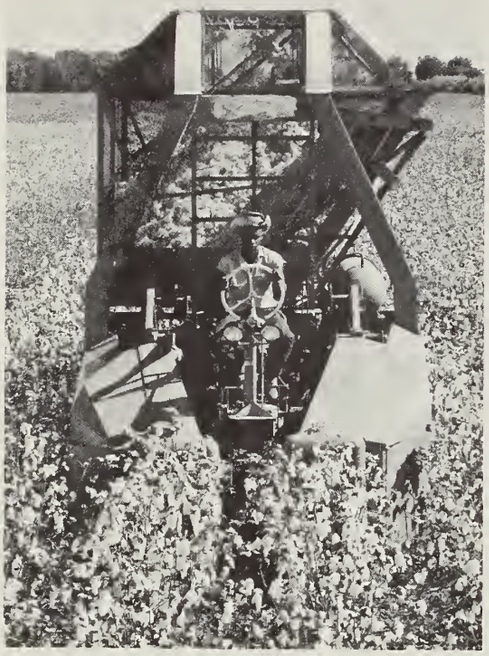
At the gin, cotton from each defoliation treatment was subjected to three different cleaning setups using two different moisture levels. Each cleaning setup included two seed cotton cleaners. The first arrangement had one lint cleaner and the second had two; the third arrangement included two lint cleaners plus a stick and green leaf machine for further cleaning of the seed cotton. Samples were ginned three times with each defoliation, cleaning and moisture level.

Lint moisture content averaged about 4.4 per cent at the normal level and 2.6 per cent for the low moisture batches. Although additional drying tended to make the cotton less desirable for processing, the differences in quality between it and the lint dried at normal moisture levels were not large.

A minimum amount of cleaning produced longer and more uniform fibers in the ginned lint than did the other two cleaning treatments. However, after carding, or carding and combing, the differences disappeared. The treatments apparently affected only the processing performance of the lint (yarn strength, amount of waste and so forth). Test results did not indicate any differences in cleaning related to the use of defoliation.

The effect of defoliation on lint quality showed up in the micronaire readings. (A desirable reading is 4.0 to 4.5.) The average readings from the first harvest were 3.47 for premature defoliation and 3.67 for normal defoliation, compared with 3.57 for the undefoliated samples. The poorer-quality cotton from the second harvest after frost had readings of 2.40, 2.70 and 2.87.

In addition to grades and staple lengths, micronaire values now are also used in determining premiums and discounts and therefore affect the farmer's return. *(2)*



QUEST FOR QUALITY

When only the effects on grade are considered, it makes little difference whether cotton is picked by humans or machines.

With three-fourths of the Mississippi Delta cotton crop harvested mechanically, producers as well as gin operators want to know what this is doing to the quality of their cotton. The answer is, not much.

Not that the change from hand to machine harvesting hasn't had its impact on ginning, but the virtues and vices of the mechanical harvester tend to cancel each other out. The overall difference between the old and the new practice is negligible.

Most farmers in the area have turned to mechanical harvesting because they believe it is more economical. Others have changed because of the uncertainty of an adequate supply of labor in some parts of the Delta. If unlimited labor were still available at current wage rates, some farmers would prefer to use it. Others would stick with machines, regardless of labor supply.

A recent study by the Mississippi State University Agricultural Experiment Station, in cooperation with the Economic Research Service, analyses the principal differences between the two harvesting methods. For their study, the specialists chose 1960 as a typical year. The main points of comparison are:

Harvest season. The harvesting season lasts longer and is more evenly distributed for hand picking than for machine picking. About 20 per cent of the hand-picked cotton in the Delta was ginned early in the season, about half in midseason and 30 per cent late. Machine harvesting is concentrated in the middle of the season. Less than 10 per cent of the machine-harvested cotton was processed in the early season, a shade under 15 per cent at the end of it. The rest of the crop was sent through the gin midseason.

Quality. Hand-picked cotton got a slightly better score on grading in all three periods of the harvesting season, but never by as much as a full grade. Staple length was greater for hand-picked cotton in the early and middle ginning seasons; at the end of the season it was greater for machine-picked. But the difference in average staple length was never as much as 1/64 inch.

Ginning waste. There was more trash in machine-picked cotton in the early and midseason; hand-picked cotton had more trash during the late season, when much of it was snapped or pulled. On the average the difference was very small—13.48 per cent for hand-picked and 13.52 per cent for machine-picked.

Lint turnout. Contrary to popular belief, the lint turnout was slightly higher for machine-picked cotton. Lint represented 32.39 per cent of seed cotton and trash for machine-picked, compared with 31.83 per cent for hand-picked.

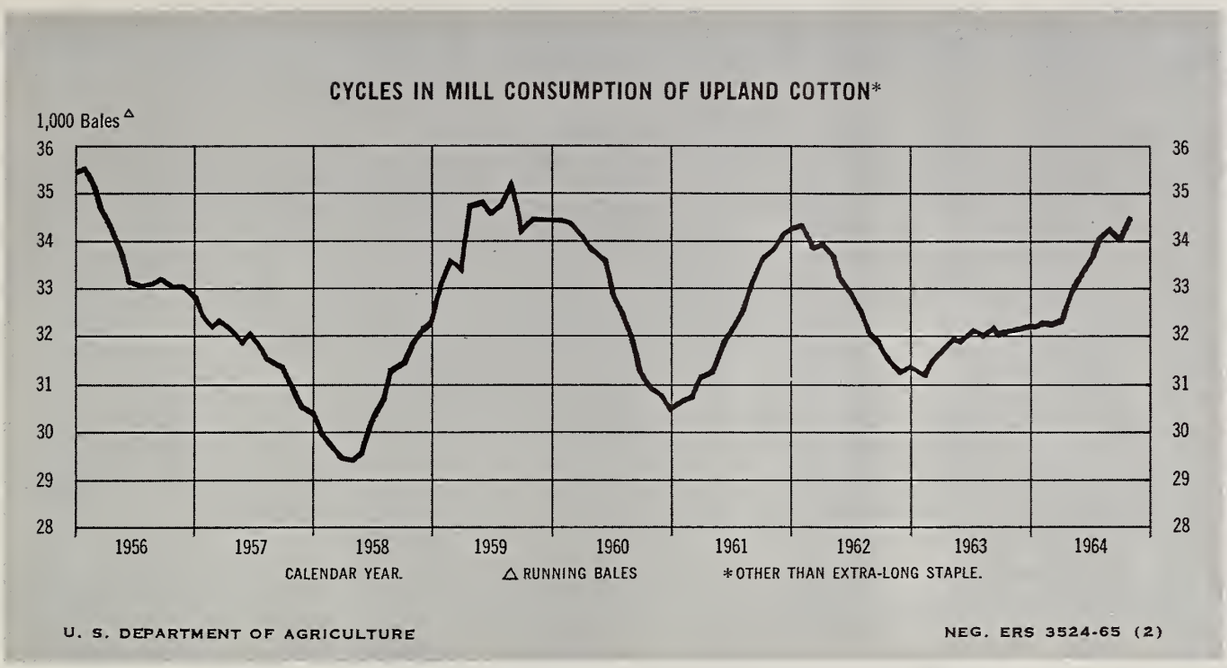
Overall quality. Over the entire season, the difference between machine- and hand-picked cotton was nearly invisible.

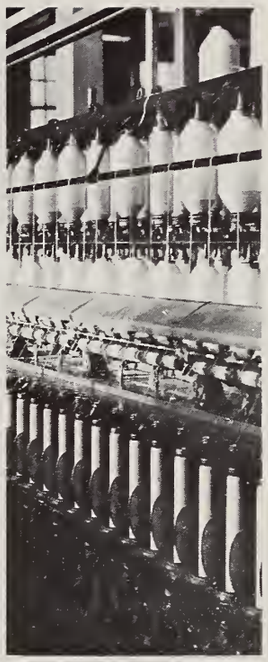
The grade was higher for hand-picked cotton but the difference was only 2½ index points. It was 95.98, or slightly above the Strict Low Middling grade, for the hand-picked cotton; 92.44 for machine-picked, about midway between Low Middling Plus and Strict Low Middling.

At market prices of the past few seasons, the difference in grade would give the edge to hand-picked cotton by as much as $3.50 to $7 a bale. However, the difference in lint turnout favoring machine-picked cotton would offset most of this difference.

Thus, all things considered, there seems to be little difference in the effect ginning has on the factors that affect lint value. This is true whether the cotton is hand-picked or picked by machine.

A point to remember: This analysis deals only with the cotton after harvest. The economics of the different harvesting methods isn't included in the study. *(3)*





Amount of Raw Cotton Used at Mills Fluctuates With Cloth Inventories

The ups and downs of cotton consumption by textile mills are of special concern to producers in determining demand for their product. When general business is good and the demand for cloth is booming, cotton growers can figure on a ready market for their crop. On the other hand, in periods of general business recession, the demand for cotton by mills tends to fall off.

In a study of cotton consumption cycles from 1955 to 1964, ERS economists were able to trace two complete cyclical movements in the use of upland cotton, which includes all fiber types except extra-long staple cotton. In general, the up and down swings of cotton followed general business cycles. But the swings in the cotton cycles were often amplified by changes in cotton textile inventories.

To illustrate, during periods of rising demand the production of cloth by mills increased. Even after demand began to taper off, production continued at a high level for a while and the consumption of raw cotton reached relatively high peaks. As a consequence, excess cloth inventories accumulated. In reducing these inventories, the raw cotton consumption rate then dropped to relatively low levels.

The first cyclical upswing in the use of upland cotton began in the spring of 1958. Use trended upward until around the middle of 1959 and then dropped until a low was reached around the close of 1960.

The second cycle was shorter, only 24 months. It began early in 1961, reached its peak around January of 1962 and then dropped to another low late that year.

At present, upland cotton consumption is in the expansionary phase of a third cycle which began after the 1962 low. The amount of cotton used by mills has been trending upward since that time, except for a period in 1963 when pending legislation affecting cotton (later passed as the Agricultural Act of 1964) caused a standstill in the upward swing.

The dip in last October's five-month moving average is due partly to the inclusion of December consumption data. In 1964 these data were for a five-week period, which included both the Christmas and New Year's holidays when most mills are closed. *(4)*

Cotton Planting Intentions Are Down Four Per Cent From March 1, 1964

Growers expect to plant 14.3 million acres of cotton this year, 4 per cent less than in 1964.

The top three cotton states, Texas, Mississippi and Arkansas, reported prospective plantings of 5.9 million acres, 1.5 million acres and 1.3 million acres, respectively. The cotton acreage in Texas is down 5 per cent from 1964 while indicated plantings in both Mississippi and Arkansas are 1 per cent lower. In fact, the only states showing any increase in acreage from 1964 are those in the "other states" group (Virginia, Florida, Illinois, Kentucky and Nevada), expected to gain 1 per cent. Prospective plantings for the group total only 54,000 acres.

If farmers carry out their planting intentions, more growers than in 1964 will limit acreages to 65 per cent of their farm allotments under the domestic allotment program. This will qualify them for the additional price support of 4.35 cents per pound. Last year, the domestic allotment program didn't get under way until after planting began so participation was comparatively light. Payment was 3.5 cents per pound. *(5)*

Higher Yields Per Acre Enable West To Rival Delta in Growing Cotton

Cotton is still King in the Delta region of the mid-South but it's fast becoming Queen in the irrigated West. During the last 20 years cotton production in the West has risen rapidly to where that region claimed 23 per cent of the total U.S. output in 1963, compared with 24 per cent for the Delta.

Both regions have two common characteristics—level clay loam soils well adapted to mechanized cotton production and large, well-managed farms where cotton has a comparative advantage over most alternative crops.

The big difference is that western cotton growers are dependent almost entirely upon irrigation water while irrigation is only of minor importance in the Delta. Also, the prices paid for many inputs are higher in the West.

Recently ERS economists compared some of the important aspects of cotton production in the mid-South and irrigated West. Their findings were based on 1963 figures.

In the San Joaquin Valley in California, one of the big cotton areas in the western irrigated region, direct labor costs for cotton growers were close to $52 per acre, compared with only $33 in the Delta. It took fewer man-hours to produce an acre of cotton in the San Joaquin Valley but wages were substantially higher than those in the Delta.

Power and machinery costs for both areas ran about the same, $25 per acre. However, farmers in the San Joaquin Valley generally relied more heavily on custom or contract services than did Delta farmers. Costs for contract services (including ginning) in the Valley amounted to $48 per acre; $22 in the Delta.

The need to irrigate also boosted the material costs of San Joaquin farmers over those for farmers in the Delta. Materials (including irrigation water) came to $48 in the San Joaquin Valley, only $26 in the Delta. However, the direct costs per bale were lower in the Valley because of higher yields per acre, $75 compared with $83 for each bale produced in the mid-South.

Higher yields per acre made cotton pay off for farmers in the West. Despite larger input costs, especially higher land values and larger capital investments in irrigation facilities, cotton was a profitable crop to grow.

Average yields per acre totaled nearly 960 pounds of lint for San Joaquin farmers in 1963, compared with only 646 for Delta growers. And the western cotton brought nearly 2 cents more per pound of lint, based on 1961-63 averages of prices received, because of its higher tensile strength and greater fiber uniformity compared with Delta cotton. *(6)*

Wheat, Feed Grains Mix and Match Under Provisions of 1965 Programs

For the first time, farmers who sign up for both the 1965 wheat and feed grain programs will be permitted to substitute acreages. However, while price support loans are available to producers planting feed grains on wheat acreage, support payments are not. Wheat planted on feed grain land also is eligible for loans but not for certificates.

To be eligible for a price support loan on wheat and certificates, a producer must comply with the provisions of the 1965 wheat program. He also can obtain diversion payments by diverting 10 to 20 per cent of his allotment.

The national average price support loan for wheat is $1.25 this year, 5 cents less than for 1964. However, the certificates, domestic worth 75 cents a bushel and export worth 30 cents, are both 5 cents higher. *(7)*

Economists' Tool, Linear Programming, Helps to Solve Management Problems

Mention linear programming and you are apt to get a blank look from many people, even though we are living in the "computer age." But the often-mentioned tool of today's economist isn't as mysterious as it sounds. Basically, it's a branch of linear economics—which means that the problem being solved is expressed in the simplest of mathematical functions—a sum.

Restraints and unknown quantities are the things that make a sum in linear programming more complicated than $2+2=4$. When one or more of the variables or items being added is under a restraint, a minimum or maximum level has been set beyond which it can't go. Often, many of the variables, like the acreage of each crop in a farm organization, aren't known and must be designated by letters or other symbols.

To illustrate how linear programming is used, here's a hypothetical example of a problem in farm organization.

The problem: How can the farmer make the most net income for himself and his family? His alternative farm enterprises are cotton, a corn-hay rotation, feeder cattle and hogs (in order of the net income they yield the farmer). He has a fixed amount of land (160 acres) and his labor. He can buy as much of all the other resources he needs—seed, fertilizer, gas and oil, and so forth.

To make the most net income, the farmer would produce all the cotton he can within his limitations and then add the other enterprises, in order of net income potential, until the most profitable use is made of all his resources. However, at times his labor resource is under a restraint. During the summer and early fall months, when cultivating and harvesting of cotton, corn and hay take place at the same time, he

may have trouble getting all the work done.

In describing the problem and limitations, the economist has made the first step toward a solution with the use of programming. Next he must set up on paper a model (in known and unknown figures) to represent the system under study—the model is simply a representative set of all of the alternatives the farmer faces in reality. Then the researcher will put all the figures into an equation, using symbols for the unknowns, and add them. To speed matters, he may use electronic data processing equipment to do all the arithmetic.

The economist then must test both the model and the solution to determine whether they are reasonable in the light of the farmer's actual operation. For example, the model might produce a solution of feeding 4,000 cattle a year —impossible without turning the whole farm into a feedlot.

The final step before putting the solution to work for the farmer is to establish control over the alternatives in the model. In the example, where cotton production is one of the enterprises, the allotment becomes a control over the actual acreage. *(8)*

Berrien, Van Buren Counties' Share Of Mich. Truck Crops Is 16 Per Cent

Lake Michigan is a sort of natural thermostat for truck crop producers in Michigan's Berrien and Van Buren Counties. Its moderating influence helps prevent the sudden extremes in temperature that can wipe out a fruit or vegetable crop overnight.

In 1959 (the latest year for which county figures are available), truck crop growers in Berrien and Van Buren Counties harvested $3.1 million worth of vegetables from 17,751 acres. These farmers accounted for 16 per cent of the harvested acreage of truck crops in Michigan and 16 per cent of the total value of all vegetables produced. (In 1963, the truck crop industry in Michigan harvested 113,860 acres of produce valued in excess of $39 million. U.S. truck crop production occupied 3.3 million acres and was worth $1.2 billion, or $361 per acre.)

Berrien and Van Buren Counties are the asparagus center of Michigan. Together, they claim nearly three-fourths of state acreage. The area also is a major producer of cantaloupes, tomatoes and strawberries.

During 1959, a sample of 346 truck farms in the two-county locality was surveyed to get an idea of the truck crop production practices used. On the average, the survey farms contained 93.5 acres of cropland with roughly 11 acres in vegetables and 5 acres in strawberries. About 44 per cent of the vegetable acreage was grown for processing.

Some facts on the yields per acre and costs of contract labor and materials (seed or plants, fertilizer and lime, sprays, packing supplies and so forth) for several major truck crops in Berrien and Van Buren Counties are revealed by the study results:

—Asparagus yields averaged 14.2 hundredweight in 1959. Costs of labor and materials came to $2.81 per hundredweight.

—Cantaloupes yielded 76 hundredweight per acre. Expenses were $1.95 per hundredweight.

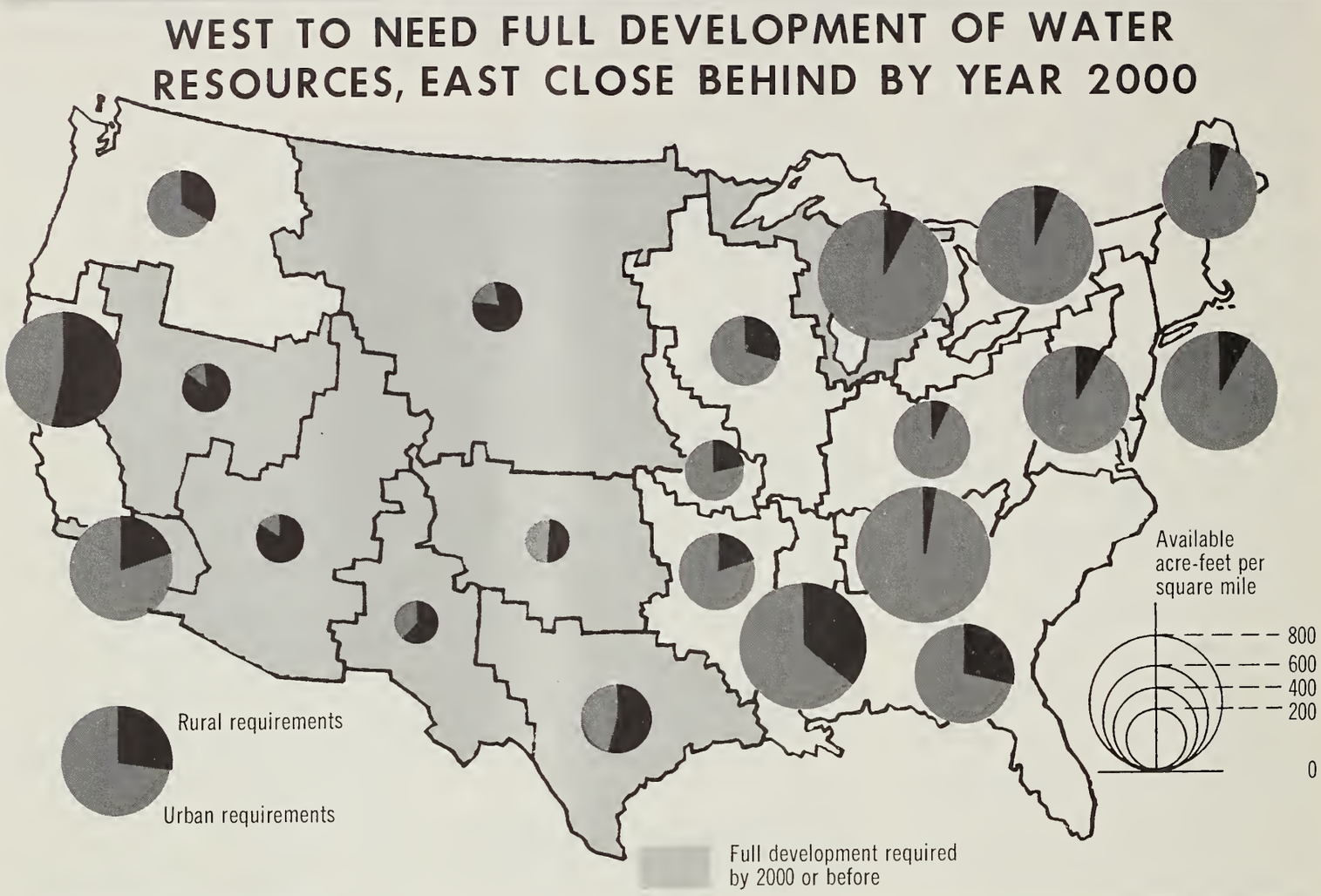
—Tomato plantings produced 110.9 hundredweight per acre at costs averaging $2.35 per hundredweight.

—Strawberries averaged 65.3 hundredweight an acre. The bill for materials and contract work figured $4.54 per hundredweight. The cost of establishing new beds was $65.30 per acre, per crop. *(9)*

Livestock	Grain-consuming animal units fed annually in year beginning Oct. 1 [1]					
	1959	1960	1961	1962 [2]	1963 [2]	1964 [3]
	Thousands					
Milk cows	20,088	19,936	19,726	19,240	18,629	18,116
Other dairy cows	3,712	3,700	3,630	3,495	3,352	3,253
Cattle on feed	15,009	15,893	16,609	18,212	18,645	18,660
Other beef cattle	9,586	9,683	10,105	10,689	11,282	11,569
Sheep	1,155	1,158	1,112	1,048	967	903
Hogs	66,408	66,565	66,062	67,970	66,342	61,539
Horses and mules	3,691	3,691	3,691	3,691	3,691	3,691
Hens and pullets	20,171	19,634	19,937	19,796	19,865	20,163
Chickens raised	5,891	6,105	5,620	5,523	5,523	5,608
Broilers	14,360	15,941	16,194	16,826	17,190	17,989
Turkeys	5,677	7,251	6,300	6,319	6,675	6,867
Total	**165,748**	**167,557**	**168,986**	**172,809**	**172,161**	**168,358**

[1] Data not available for Alaska and Hawaii. [2] Revised. [3] Preliminary.

NO INCREASE IN GRAIN-CONSUMING ANIMAL UNITS: Higher feed costs and lower livestock prices in the last two years have caused a reversal of the upward trend in the number of livestock on feed. In the 1963/64 feed year, the number of grain-consuming animal units (livestock and poultry numbers weighted by the consumption of concentrates) declined slightly after trending upward for several years. Preliminary estimates for 1964/65 indicate a further decline of about 2 per cent may occur. *(10)*



WATER FOR THE 21st CENTURY

Our future economy depends in large measure on how well we can conserve our water resources. Federal and state planners are developing a comprehensive program for the nation's watersheds

Some 4.75 billion acre-feet of water fall on the United States each year, either as rain or snow.

This sounds like more than enough to meet our myriad needs for water. And it would be—if we got to use it all.

The first problem is that 32 per cent of this supply returns to the air as evaporation or transpiration from bare landscapes and non-beneficial vegetation. Another 38 per cent sustains our forests and fields, including the nonirrigated farmland which produces 80 per cent by value of the nation's crops and livestock.

The remaining 30 per cent of our total precipitation that flows into rivers, streams and lakes has to supply all our other needs—irrigated farming, outdoor recreation, fish and wildlife, hydropower, navigation, industry and urban uses, and finally, waste dilution so that the same water can be used again.

New projections (see map) show that by the year 2000—just 35 years from now—the water needs of the western half of the nation, excluding the Pacific Coast, will exceed the maximum sustained flow of rivers, streams and lakes.

Need will exceed maximum flow even with twice the present level of waste treatment and a greatly expanded water storage

and control program.

The western Great Lakes area is in a similar position and all regions will be in the same boat if waste treatment, storage and control efforts haven't expanded as much as the projections assume.

Recognizing the need, the U.S. Senate has directed the federal government, working with the states, to formulate a comprehensive plan to develop and then to efficiently manage our water resources in all major river basins.

Major objective of the nationwide plan is to provide enough water for a population expected to double and a gross national product expected to quadruple between 1960 and 2000—and to do this at the lowest possible cost to taxpayers.

First step is a broad analysis of the water needs and problems, both rural and urban, in each water resource region and the general development approach required to meet them.

As part of these regional studies, ERS staff members, working with other agencies, are assessing the growth of the agricultural economy and its projected demand for water.

Regional studies are already under way in the Ohio, Upper Mississippi and Missouri basins. Sixteen major river basins are to be studied, with all regional reports to be completed by about 1972.

ERS economists are developing analytical methods that will be helpful in selecting from an infinite array of possibilities and designing the necessary components of an optimal system and schedule of development.

An adequate system, when fully developed, will identify the size of each project in the system, its geographical location and the purposes to be served—irrigation, flood control, generation of hydroelectric power, pollution abatement and so forth. *(11)*

Migration Counterstream Has Brought Over Two Million Town Folk to Farms

One out of every six adults living off the farm in 1958 was born on a farm. Nothing surprising about that. Everybody knows people have been migrating off farms for years.

But what may surprise many people is the fact that one of every five adults living on farms in 1958 was born off the farm.

Of course, the first of these two migratory streams was a river, the second a comparative creek. For every six farm people who left agriculture, only one nonfarm born person moved to a farm.

In 1958 there were 2,180,000 adult farm residents who had been born to parents not living on a farm. In addition, there were 404,000 foreign-born persons living on American farms.

The study found that the Northeast and West have the highest proportion of farm residents who were born off the farm. In both regions, the proportion was over 40 per cent. On the other hand, only 13 per cent of the South's farm residents had a nonfarm birthplace.

Several factors may explain the lopsided distribution. At the time of the survey, nearly a fifth of all farm operators were nonfarm-born, compared with a third of all hired farm workers. Thus, to the extent that hired hands live on farms, a region with a high proportion of such workers in its agricultural labor force, such as the West, would tend to have a high percentage of farm residents of nonfarm origin. The same would hold true for the Northeast, where hired hands comprise a moderately high proportion of the farm labor force.

Another factor in the differences by region might be the relatively recent settlement of some sections of the agricultural West. This may have provided more opportunities for nonfarm people to go into farming.

In the Northeast, the farm population is tiny compared with the metropolitan population. The movement of a relatively small proportion of nonfarm people into agriculture is enough to alter radically the composition of the farm population.

The study brought out several other characteristics of farm residents born in towns. They don't move from region to region as often as farm natives who go to a city. Usually the nonfarm-born who move to farms stay in the region of their birth. Many are women who join the farm population by marriage.

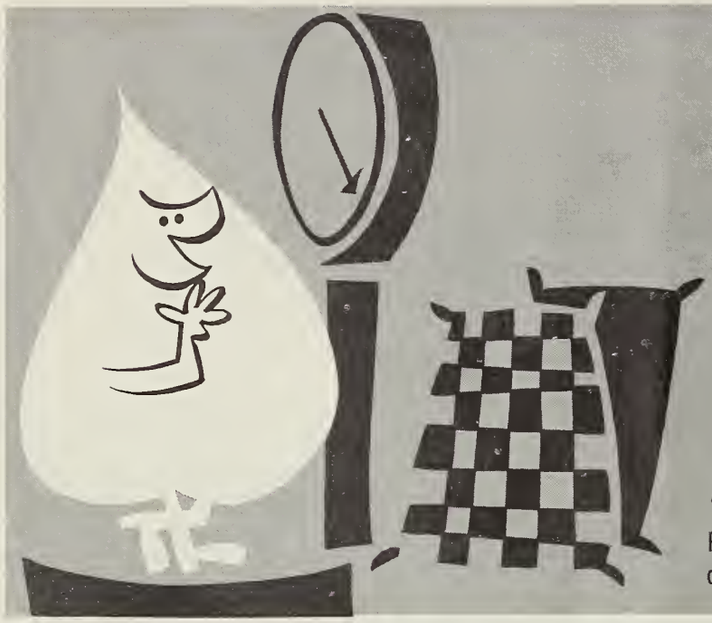
About half the employed nonfarm migrants on farms in 1958 were predominantly engaged in farm occupations, with 27 per cent as farmers and farm managers and 22 per cent as farm laborers. Many of the others were wives, and more wives were working off the farm than on.

And others included in the totals were those who moved to farms for the pleasure of a farm residence, though they continued to work in town. *(13)*

How Old Is Old?

As part of a study of differences in mental outlook between men and women which might affect the design of public health programs for the aged, a group of rural Kentuckians ages 45-60 were asked a series of questions about health expectations for their old age. The definition of the term "old age" was left up to the individual respondents.

The median age of the men in the study was 52; women, 51. So it was somewhat surprising that 16 per cent of the 93 men surveyed and 12 per cent of the 110 women said that a person was old at ages 40 to 54. Other incidental findings: the men believed old age occurred slightly earlier than did the women; and the women more often believed that being old depended on the individual. *(12)*



new image for TALLOW

Fatty acids and feeds are supplanting soap as top markets for ever growing output of inedible tallow and grease.

"Let's have steak for dinner. And don't forget to buy detergent for the dishes."

These two requests from housewife to husband on his way to the supermarket tell the story of why renderers are looking for new outlets for tallow and grease.

Families eating more steak and other meats have sparked an unprecedented step-up in livestock slaughter in the last 15 years or so. Renderers processing the inedible residue report output of tallow and grease has more than doubled since 1949, from 2.1 billion pounds to 4.4 billion a year. What's more, production is expected to top 5.1 billion pounds by 1970.

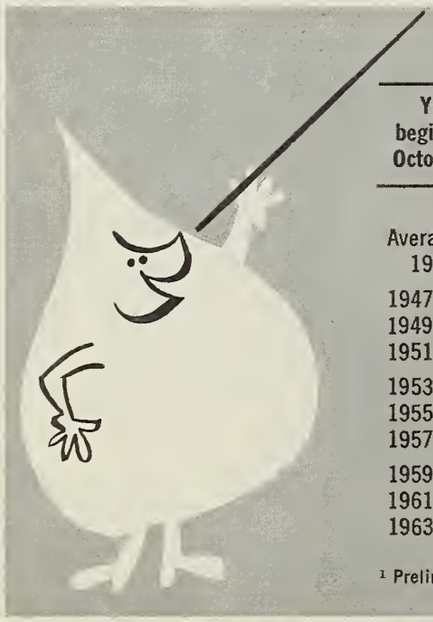
Where will renderers market such quantities?

Biggest outlet in years past for inedible tallow and grease was the soap industry. Today, however, most powdered, flaked and liquid "soaps" are really synthetic detergents made from petroleum and salts.

Economists predict major growth in markets for tallow and grease in this country will be in feed for livestock and poultry and in production of fatty acids. Fatty acids are reacted with other materials to make chemical compounds used in cosmetics, insecticides and other industrial products. In fact, fatty acids could surpass soap as a market for tallow and grease by 1970.

Principal domestic market today—and one that should spiral with consumer demand for meat—is livestock and poultry feed. Fat not only adds more energy to feeds, it aids in processing them as well. The feed industry used an estimated 800 million pounds of tallow and grease in 1964. Projected use in 1970: 1.4 billion pounds.

Changing markets call for changing products. Renderers



PREWAR FEEDS USED NO TALLOW AND GREASE; TODAY'S USE SURPASSES SOAP

Year beginning October—	Soap	Animal feeds	Fatty acids	Lubricants and similar oils	Other	Refining loss	Total
	Million pounds						
Average 1935-39	787	—	—	—	161	1	949
1947	1,510	—	184	23	125	—	1,842
1949	1,335	—	202	21	176	—	1,733
1951	1,103	—	199	24	224	—	1,550
1953	967	71	245	25	258	8	1,574
1955	840	263	290	38	229	17	1,677
1957	744	542	249	29	232	3	1,799
1959	735	439	391	80	162	—	1,806
1961	702	732	402	79	177	—	2,093
1963 [1]	660	712	478	91	185	—	2,126

[1] Preliminary.

need to tailor their products to the needs of the feed industry. Color and free fatty acid content, important for soapmaking, have little bearing on feed value. Instead, feed producers want a product that converts easily to energy usable by the animal, is stable, clean, not rancid and free of objectionable odors.

In addition to these large and promising domestic markets, there is a big market for inedible tallow and grease abroad. We lead world trade in tallow. Exports in 1963/64 came to 2.4 billion pounds, some 300 million pounds more than we used at home.

The export market has great potential for expansion. Inedible tallow is the lowest priced fat or oil moving in quantity in world trade. Many countries use it for soap and other industrial purposes, thus freeing their more costly palm, coconut, fish and other oils for home use in foods.

Moreover, many nations developing their own livestock industry also are adding fats to feeds. Western Europe and Japan will undoubtedly up imports of U.S. tallow and grease for this purpose.

On balance, renderers have lost markets to synthetic detergents. But they have found new markets to make up the losses.

Just the same, the industry will need to press forward in its search for new outlets. The basic problem will be how to market a larger supply of tallow at good prices when the petroleum industry will also be trying to market more of its own substitutes for the fatty acids.

Renderers can help themselves by operating their plants more efficiently and continuing to improve the quality and uniformity of their product. They should also work more closely with users; learn their needs, which differ considerably from soap maker to feed manufacturer, then strive to meet these needs. *(14)*

The Sound of Nation's Cash Registers Rings in Modernizing Boom for Cottons

The American textile industry has accelerated its pace of capital investment in the past several months, according to continuing reports in the trade and financial press.

The articles indicate, for instance, that capital spending programs in most of the big mills have been enormously increased. One result is that production is up 12 per cent from 1962, while job rolls have increased less than 1 per cent.

The figures show what the textile industry—especially cotton—is doing to strengthen its position in a market beset with competition from increased world output of natural fibers and from the inroads made by synthetics.

What the figures don't show is the long period of obsolescence that preceded this recent push to diversification and modernization.

A recent study of the entire industry, made by ERS, reviews the market position of the major segments of the industry and points to the most likely areas of further cost reductions.

Ginning. Most probable way to reduce costs for gins is through consolidation and abandoning the use of old, badly worn and obsolete equipment.

A study made some years back showed that even at peak season, less than 40 per cent of total ginning capacity was used in about a quarter of the cotton-producing counties in the nation. Between 1947 and 1962, the number of gins in the nation dropped from 6,800 to 5,400, reducing unused capacity but still leaving room for improvement.

Greater volume per plant, accompanying the declining number of gins, also makes it easier for the operator to invest in the kind of equipment that would help boost output and cut costs per bale. Better use of existing equipment and labor are other ways that plants can keep their costs down.

Transportation. Lower freight rates for cotton since 1954 have helped lower costs to industry.

Grading and sampling. Multiple samples raise the cost of sampling. Cutting samples from the bales after ginning damages the appearance of the bale and exposes the lint to contamination. Mechanical sampling might solve some of the problems, though existing equipment has had little success to date.

Manufacturing yarns. Despite vast improvements by manufacturers in general, many mills have yet to push technological advances as far as they could. A 1950 study showed that the cost of spinning 10s yarn, for example, ran from 12.88 cents to 17.78 cents a pound, averaged 15.05 cents. A theoretical model indicated such costs could be cut to 10.54 cents.

Installation of new, more productive equipment since then, particularly in recent months, has increased efficiency and helped offset rising costs for raw materials, labor and other inputs. But substantial further improvements appear possible.

The results of improvements in yarn making would have a sizable impact on the final cost of product. For instance, a cut of 25 per cent in gross margins for manufacturing cotton yarn would result in savings greater than the total costs of ginning and baling cotton.

Manufacturing fabric. Weaving, as well as spinning, has been improved through use of new methods, retiring obsolete equipment. The importance of improved techniques in manufacturing can be measured by manufacturers' margins. In the late '50s, they averaged almost as much as gross returns to cotton producers, three times as much as total costs of ginning and merchandising cotton. *(15)*

Processed Potato Products Likely To Take Bigger Share of Market by 1970

Gilbert and Sullivan could never find a "bashful young potato" to write songs about today. The potatoes of the 1960s are sophisticated—they're puffed, scalloped, hashed, frozen, flaked, dehydrated—and further innovations in processing may find new ways to dress up the potatoes of the future.

In the short space of 10 years, the production of processed potato products, excluding chips, has grown from a market using less than 700 million pounds of potatoes for food to one that now uses over 3.5 billion pounds. And chips, a big seller 10 years ago, are even more popular today. During this period per capita consumption of chips about doubled.

Looking ahead to 1975, ERS economists figure that the potato market will grow just about as fast as population, some 25 per cent in the next 10 years. But gains in output and consumption of processed potatoes should be considerably more.

Some predictions have been made that would put one-half of the potato crop in the processed category by 1970. Since processing now takes about one-fourth of the total crop, that prediction, if true, would amount to a 100 per cent increase. *(16)*

Cost Scales Tip in Favor of Larger Handlers in Modern City Milk Markets

Ever since the first milk bottle entered the market 70-odd years ago, small distributors have been going out. As in most service industries, the numerous technological changes in milk marketing have combined to tip the cost scales in favor of the larger handler.

According to a new ERS study of 71 fluid milk markets, the typical city milk market of the 1960s has two important characteristics: (1) A few firms make most of the sales; and (2) small milk dealers are still going out of business.

Between 1950 and 1962, the period of the ERS study, the number of handlers decreased by nearly one-half in the 71 markets, declining at a faster rate in the smaller markets than in the larger ones. The great bulk of the firms that left the market, either by selling out or closing down, were small handlers with only a few routes.

Concentration—the share of the market held by the four largest firms—increased fairly rapidly in the smaller markets as handler numbers declined. However, in the larger market areas (those where monthly sales totaled 60 million pounds or more), the decline in handler numbers was also accompanied by a slight decline in concentration.

For the country as a whole, the three largest dairy companies made nearly 16 per cent of the commercial sales of packaged fluid milk and cream in 1950. Their share increased by 2.4 percentage points in the next seven years. The share of the next five largest firms increased somewhat more rapidly between 1950 and 1957—from 4.3 to 7.2 per cent.

The average growth rate (in terms of share of the market) of firms among the four largest in each market was lower for national firms and for local single-unit firms (those with only one bottling plant) than for regional and local multi-unit firms.

A substantial portion of the growth of the national firms was through acquisition of other firms already in the market. Units of national firms which made no major acquisitions between 1950 and 1962 hardly grew at all, although firms of all other types were growing somewhere between 1.5 per cent and 3.5 per cent each year on the average. *(17)*

Mills Trim Output of Woolen Goods As Cotton, Synthetics Move Ahead

Manufacturers cut their output of finished woolens and worsted last year by something like 14 million linear yards. Output for 1964 ran to 270 million yards; in 1963 it was 284 million. The 1964 figure was 15 per cent off the high point of 310 million yards in 1962.

Production was down for all fabric groups—for women's and children's fabrics, for men's and boys', and for government apparel orders.

At 65 million yards, output for men's and boys' wear was off 16 per cent in the first three quarters of 1964, compared with the same period a year earlier. With a production figure of 131 million yards, output of women's and children's wear was off only 2 per cent.

The biggest percentage cut was in the government's apparel orders, off 63 per cent for the first three quarters of 1964 compared with a year earlier. In absolute figures, however, the government orders are minor in comparison with the other categories. Government orders totaled 1.3 million linear yards for the period.

While wool fabric production slid, output of cotton and synthetic fabrics was on the upturn. Production of woolen and worsted fabrics was down 9 per cent January-September last year compared with 1963. Production of cotton broadwoven goods totaled 6.6 billion linear yards in the same period, 1 per cent above the 1963 period. And with 2.6 billion yards, output of broadwoven goods from man-made fibers was up 16 per cent from the first nine months of 1963.

Output trends for tufted rugs and carpeting were about the same. Overall shipments were up in 1964 but the increase was all in the non-cellulosic synthetics. Use of wool, cotton, rayon and acetate dropped. *(18)*

New Process Blows Flour to Pieces, Makes One Type Do Work of Many

Does air classification of wheat save millers more money than it costs?

ERS research indicates the answer is yes—under the right conditions.

Air classification, or turbomilling as it is often called in the industry, is a process that separates flour particles through the interaction of centrifugal force and a countercurrent of air. A stream of flour falls on a spinning disk and is thrown off radially by centrifugal force. The smaller, lighter particles become entrained in a counter-current of air and are carried to one outlet while the larger, heavier particles continue on to another outlet. By varying disk speed and air velocity, the cut point of the separation can be controlled.

The value of the technique stems from differences in composition and properties of flour particles of different sizes. The smaller particles are rich in protein; the intermediate size particles contain mostly starch, while the largest particles or indosperm chunks contain about the same ratio of starch to protein as the original flour.

What the process does is make one variety of wheat do the job of several. It permits the miller to tailor-make flours from a given wheat to suit a wide range of uses.

Normally, cake flours take a soft wheat with a low protein content. Bread flours, on the other hand, require high protein, strong gluten flours.

Air classification can reduce protein content to meet requirements of cake and pastry flours or it can raise protein content to levels needed for good bread flour. It is most applicable in areas where the protein content of wheat is inadequate for producing good bread flour or is too high for good cake flour.

ERS researchers caution, however, that while the process can change the *level* of protein, it can't change protein *quality*. Turbomilled bread flour has to have good quality protein to start with.

Economists set up several model situations to examine the economics of the process when applied to different types of wheat. The process is particularly advantageous when applied to hard red winter wheat. Much of this wheat contains 11 to 11.5 per cent protein.

Good bread flour requires wheat with 12 to 13 per cent protein. Millers, however, can air classify the wheat to remove enough low protein particles to bring the protein up to the level required for bread flour. This way they get high protein flour without having to pay the premium price for 12-13 per cent protein wheat.

At the same time, the low protein fraction removed is good for cake flour, which is priced higher than bread flour. *(19)*

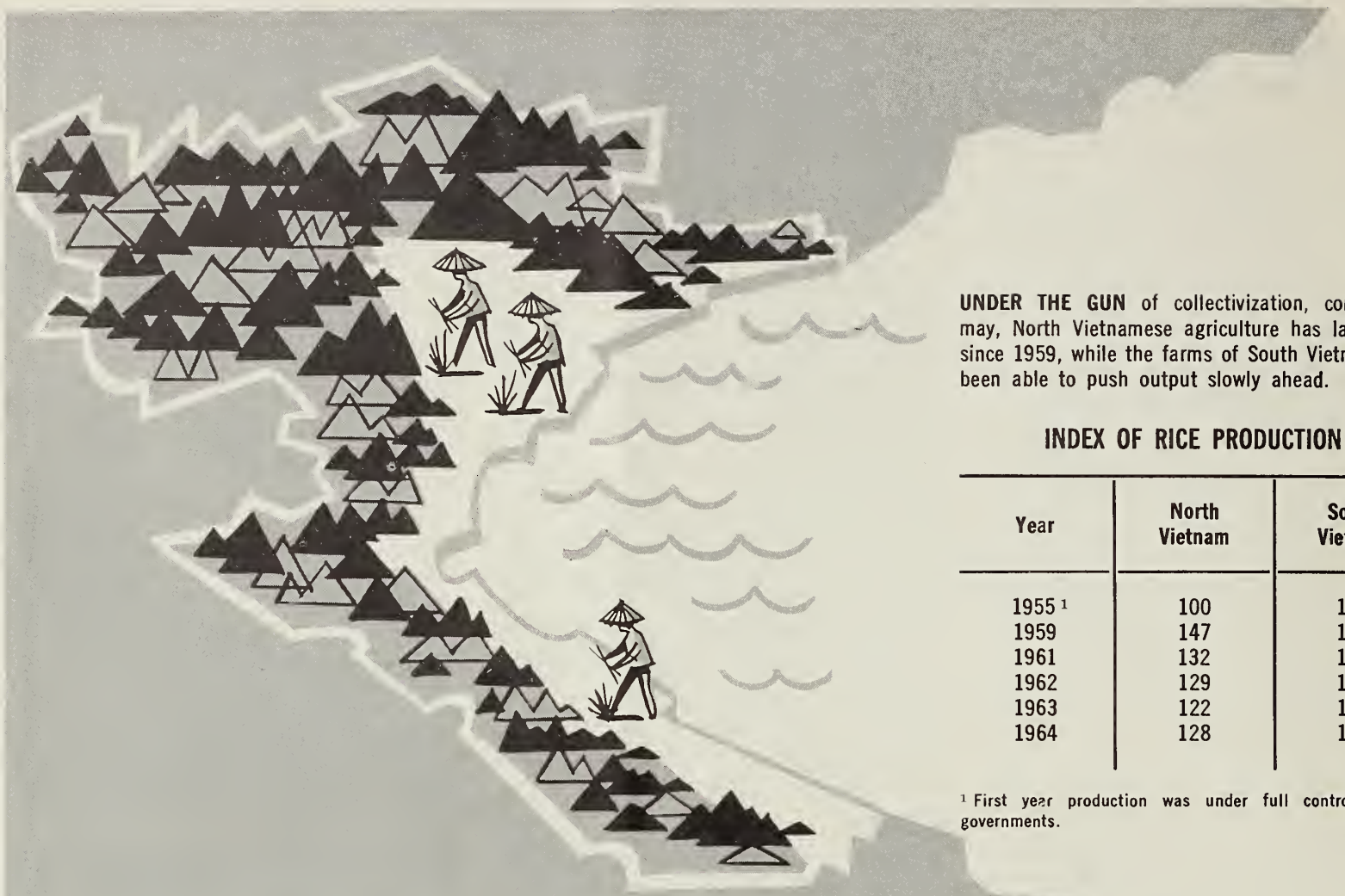
U.S. MIDLANDS UP ST. LAWRENCE USE AS EXPORT ROUTE

Year	U.S. grain shipments through Welland Canal					All countries' Seaway grain traffic	
	Wheat	Corn	Other	Total	Increase over 1959	Total	Increase over 1959
	Tons				Per cent	Tons	Per cent
1959	531,225	1,101,466	1,580,335	3,213,026	—	7,683,681	—
1960	781,241	1,299,969	1,820,853	3,902,063	21	8,890,505	16
1961	1,336,948	1,807,411	1,203,638	4,347,997	35	11,270,050	47
1962	921,455	2,487,231	2,509,159	5,917,845	84	11,366,068	48
1963	1,428,430	2,897,560	1,959,002	6,284,992	96	13,983,024	82
1964 [1]	—	—	—	—	—	16,634,991 [2]	116

[1] Not yet available. [2] Estimated.

SUCCESSFUL FIFTH. With the closing for the winter of the Welland Canal on December 15, 1964, the St. Lawrence Seaway ended its most successful season. While the final figures are not yet in, it appears that more than 51 million tons of cargo went through the Canal last year. This figure represents an 89 per cent increase over that of the Seaway's first year, 1959.

Nearly 17 million tons of the Welland Canal's traffic in 1964 came from grain—9.5 million from wheat alone—for a 116 per cent increase over 1959. In fact, during the past five years, grain has made up an increasing share of the Welland Canal's total traffic. If past experience holds true, about 45 per cent of this grain came from U.S. origins and was moving toward the sea. *(20)*



UNDER THE GUN of collectivization, come what may, North Vietnamese agriculture has languished since 1959, while the farms of South Vietnam have been able to push output slowly ahead.

INDEX OF RICE PRODUCTION

Year	North Vietnam	South Vietnam
1955 [1]	100	100
1959	147	180
1961	132	162
1962	129	183
1963	122	176
1964	128	187

[1] First year production was under full control of new governments.

AGRICULTURE ON THE DIVIDING LINE

Hanoi pushed the collectivization of agriculture along with the rest of the economy when the communists took over North Vietnam in the 1950s, and the result has been a gradual slow-down in the nation's output of basic foods

The Seventeenth Parallel separates South Vietnam from North, dividing a free world outpost from a communist stronghold, a traditional pattern of agriculture from state-controlled farms.

It also divides modest success in agricultural output from Hanoi's inability to adequately supply the nation with food.

In 1953, a year before North Vietnam was actually created by the Geneva conference, the Vietminh regime launched a land reform program. And by the late 1950s, levels of food intake had reached a relatively high point—1,700 to 1,900 calories a day per person. These figures are estimated to be 200 to 300 calories more than when the communists took over, a few hundred less than pre-World War II.

But since the 1957-59 period, production has stagnated while population has continued upward. Major food items such as rice, meat and sugar are now strictly rationed.

During the food shortages of 1960-61, for instance, the quota for rice, at its most generous, was the equivalent of slightly more than a pound a day per person; this was cut by more than a third before shortages eased.

More recently, in May 1963, the meat ration was cut from 17.5 ounces a month per person to 3.5 ounces.

The country's food and farm problems started with collectivization which followed on the heels of the land reform begun in 1953. By the autumn of 1956, land reform was basically complete. Some 2 to 2.25 million acres of cultivated land — about half the available total—had been parceled out to 2 million peasant families, a work force of about 8 million persons, including the family workers.

Landlords as a class were liquidated along with their holdings. A few landlords who had aided in the war effort were allowed to retain a bit of land, about as much as the smallest parcel given to the poorest peasant.

These new farms, however, were too small to be worked economically and the level of technical skill dropped disastrously.

As the first step toward collectivization, Hanoi introduced work exchange teams. Hopefully, the teams would get more work out of the peasants and use scarce equipment to best advantage. By 1958, four-fifths of the peasant families had been brought into the work teams.

Though the hit-or-miss progress with work exchange teams slowed the government's attempts to develop collective farms, by 1963 the regime had organized 30,000 so-called Agricultural Production Cooperatives. They were an intermediate step, of which about 30 per cent had collective status.

Because of its political reliability, the lowest level of the peasant class was put in charge of the collectives. The formerly more prosperous — and more knowledgeable — peasants were deprived of authority.

With inexperienced leadership and an apathetic following, the drive to collectivize lost its force.

The government has, in fact, turned its attention recently from shoring up its collectives to increasing farm production.

The result has been a noticeable drift to private enterprise. Hanoi's own statistics show that more than half the income for households in the collectives came from production on their own private bits of land and from sideline production.

Meanwhile, Hanoi walks a tightrope, balanced precariously between political aims to communize the economy and the practical need to produce enough food for the nation. *(21)*

RICE PRODUCTION IN NORTH VIETNAM, along with output of other food crops, has suffered from governmental mismanagement, peasant indifference. Hanoi boosted rice production for a few years after the communists took over in 1954. Since 1959, yields and output have dropped, though acreage has increased. Preoccupation with industry, commercial crops and feed and livestock have made inroads into the production of traditional food crops. Yields for such secondary foods as corn, sweetpotatoes, manioc and beans have shown overall a similar falling off from a high point around 1959.

PADDY RICE PRODUCTION

Year	Acres	Yield per acre	Production
	Thousands	Pounds	1,000 metric tons
1939	4,548	1,167	2,407
1954	4,690	1,222	2,600
1958	5,523	1,827	4,577
1959	5,618	2,038	5,193
1960	5,644	1,646	4,212
1961	5,954	1,726	4,660
1962	5,963	1,688	4,566
1963	5,924	1,470	3,950
1964	5,994	1,660	4,512

Source for both tables: **Three Years of Cultural Economic Development,** Democratic Republic of Vietnam, Directorate General of Statistics, Hanoi, 1961, and various issues of **Nhan Dan** (The People) Hanoi, 1955-64.

COMMERCIAL CROP PRODUCTION

Crops	1955	1960	1962
	1,000 metric tons		
Sugarcane	100	451.7	702.5
Peanuts, in shell	14.0	26.0	38.3
Soybeans	5.0	14.9	n.a.
Sesame	0.9	3.3	3.1
Castor beans	0.2	2.1	2.9
Cotton, seed	2.6	4.6	6.0
Jute	1.1	12.4	13.8
Tea	2.3	2.6	n.a.
Tobacco	0.6	1.6	4.0

COMMERCIAL CROP PRODUCTION IN NORTH VIETNAM has been getting most of the push from the all-powerful Lao Dong party, successor to the revolutionary Vietminh. Main reason is commercial crops, though occupying only about 5 per cent of the sown area, make up the bulk of vital agricultural exports. But despite pressure from Hanoi, farmers have been slow to increase production and the 1965 goal of 9 per cent of sown area is not likely to be met. Hemp, reed and coffee beans are small scale but important additions to the country's list of commercial crops.

World Wheat Trade Down to Normal As Major Growers Stock Record Crop

Record harvests in major wheat producing countries last year will probably reduce world trade in wheat and flour by about 15 per cent this year.

But this will represent a return to about normal business. World trade hit an unprecedented pinnacle last year when some 2 billion bushels of wheat and flour changed hands.

One reason for record trade in 1964 was the 1963 crop failure in the Soviet Union, plus continuing shortages in Communist China. Both nations bought heavily in world markets last year. France, usually self-sufficient in wheat, also had to shop abroad because of its poor 1963 harvest. So did most other West European producers.

Except for Communist China, which is still buying abroad, things are better all around this year. The Soviet Union had a good 1964 crop and won't need to import much, if any, wheat. France not only recouped its 1963 losses but ended 1964 with a large exportable surplus. In fact, harvests were excellent throughout Western Europe.

Meanwhile, the other big producers have a lot of wheat to sell elsewhere and competition is keen. Australia, with an estimated 390 million bushel crop, and Argentina, with 338 million, are both setting new production records. Canada and the United States, both with good crops, expect exports to be under last year's but about average compared with past years. *(22)*

Eight of Our Ten Top Export Markets In Fiscal '64 Were Cash Customers

The United States in fiscal 1964 shipped mixed poultry feed to Barbados, rice to Aden, wheat to the Madeira Islands. We bought coffee from Brazil and bananas from Guatemala.

In fact, final figures show we traded farm products with 150 countries in the year ended last June 30. However, we shipped 61 per cent of our farm exports to 10 countries:

1. *Japan*
2. *Canada*
3. *United Kingdom*
4. *Netherlands*
5. *West Germany*
6. *India*
7. *Italy*
8. *UAR (Egypt)*
9. *Belgium*
10. *France*

Dollar value of our export shipments ranged from Japan's high of $742 million down to France's $142 million. Second-ranked Canada would be farther down the list if we discount $161 million in U.S. corn, wheat, soybeans and barley it took for transshipment to other countries.

Except for India and the UAR (Egypt), major aid recipients, our 10 best customers paid cash.

As with exports, over half of our farm imports—54 per cent to be exact—came from 10 countries in fiscal 1964:

1. *Brazil*
2. *Philippines*
3. *Mexico*
4. *Australia*
5. *Colombia*
6. *Canada*
7. *New Zealand*
8. *Dominican Republic*
9. *Argentina*
10. *Indonesia*

Our purchases ranged from $514 million in Brazil to $96 million in Indonesia. *(23)*

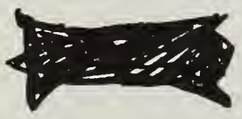
Foreign Spotlight

BRAZIL. Washington has signed an agreement with Brazilia which guarantees private U.S. investors in Brazil against loss due to expropriation, war, revolution or insurrection.

ALLIANCE FOR PROGRESS. When the Alliance began less then four years ago, there were 160 universities and advanced technical centers in Latin America with 520,000 students enrolled. Today, thanks to Alliance help, 196 institutions have an enrollment of 680,000. A discordant note in this progress is that only 3 per cent of all students are studying agronomy or veterinary medicine. A 10 per cent enrollment would be required to meet the needs of the region's agricultural economy.

INDIA. With foreign exchange earnings down 30 per cent in the past year, New Delhi has increased duties on imports by 10 per cent. Only exceptions are food grains, fertilizers, pesticides, books and contraceptives. The government has also moved to tighten internal credit and has asked the International Monetary Fund for a standby loan. One reason for the mounting Indian deficit is that some countries, notably the Soviet Union, accept rupees in payment for economic development loans. Then, instead of letting India draw on these rupee credits to help finance further development programs, as the U.S. does, the Soviets spend them on Indian goods for import. This diverts Indian products that could otherwise earn desperately needed dollars, pounds or other hard currencies to pay for Indian imports from the West. *(24)*

SHOE SAGA: Little more than a hundred years ago, every frontier father was a cobbler of sorts. Shoeless summers were the rule. When fall came, fathers would buy half sides of upper and sole leathers and spend their evenings fashioning shoes for their families. Even in the "industrialized" East, cut leather was farmed out to full-time cobblers for hand stitching. With the Civil War, however, came military orders for shoes by the hundreds of thousands. The slow, laborious hand operations were replaced by machines which multiplied the output of each worker by a hundred times and more. Today, hand stitched shoes may still be had by people who can afford to spend about fifty dollars a pair. But most people do very well, summer and winter, with their $9.95 readymades. And they pay retailers almost as much for stocking a wide variety of styles and colors (and then helping them decide which to buy) as they pay for all the manufacturing and shipping steps between green hide and finished shoe.



Hide marketing agency:
$0.45 for green hide
0.09 for curing
0.14 for fleshing

$0.68

Tannery:
$0.07 for brokerage and freight
0.25 for tanning materials
0.25 for labor
0.25 for overhead, selling, profit, shipping

$0.82

Manufacturer:
$1.00 for soles, innersoles, linings
3.00 for labor, overhead, profit, shipping

$4.00

Retailer:
$2.00 for salesmen
2.45 for overhead, selling, profit

$4.45

(25)

Record Spurt in Food Expenditures Of '64 Not Expected Again in '65

Americans spent a whopping $80 billion on food last year, $4 billion and 5 per cent above 1963. The 1964 rise was the most rapid since 1951. Food expenditures are expected to rise again this year, but more in line with the 2.8 per cent increase in 1963 over 1962.

An unusually strong advance in after-tax consumer incomes last year, 7 per cent, contributed to the 5 per cent rise in food spending. The income advance was led by increased employment and wages, lower federal income tax withholding rates and record dividend payments.

Also contributing to the 1964 spurt in food expenditures were: a 0.8 per cent gain in per capita food consumption; a 1.5 per cent increase in population; a 1.2 per cent rise in retail food prices; and further increases in prices and quantity of marketing services.

Food expenditures last year accounted for close to half of all spending for nondurable goods; they exceeded expenditures for any other single item such as housing or transportation; and they were greater than expenditures for all durable goods combined.

About 18.5 per cent of after-tax income in 1964 was spent for food. The percentage is expected to drop slightly this year as it has for several years, since proportionate gains in income are expected to again exceed increases in spending for food.

Last year's increase of nearly 1 per cent in per capita food consumption was caused by increased use of animal products—a 6 per cent rise in beef consumption plus gains in the use of turkey and chicken.

Per capita consumption of foods from crops remained about the same level as in 1963, but our consumption of vegetable oils, fresh fruits, corn sirup and rice increased. Declines occurred for processed fruits, vegetables and potatoes.

Per capita consumption this year is expected to remain near last year's high level. Gains are expected for beef, poultry and processed fruits and vegetables; declines are likely for pork, lamb and dairy products.

Retail food prices this year are expected to approximate the 1964 average, as declines for some commodities are expected to offset increases for others. Increased prices for fruits, vegetables, potatoes, coffee and sweeteners were primarily responsible for last year's 1.2 per cent gain over 1963. Price declines occurred for beef, fish and poultry. *(26)*

COMPLETELY LAUNDERABLE ALL-WOOL APPAREL: THE POTENTIAL MARKET. L. B. Clayton, Marketing Economics Division. MRR-688.

Wurlan, the new shrink-resistant wool process that imparts complete machine launderability, could be applied to advantage to an estimated 131 million pounds of wool going into all-wool apparel, based on 1962 consumption patterns.

POINT-OF-PURCHASE ADVERTISING AND FACTORS INFLUENCING USE IN SUPERMARKETS. R. E. Frye and M. Leiman, Marketing Economics Division. MRR-692.

The use of point-of-purchase advertising material in supermarkets varies by geographic region and type of store management but primarily by store size.

DEMAND FOR MANUFACTURED FOODS, MANUFACTURERS' SERVICES, AND FARM PRODUCTS IN FOOD MANUFACTURING — A STATISTICAL ANALYSIS. W. H. Waldorf, Marketing Economics Division. Tech. Bul. 1317.

A major finding of this study is that the demand of households for factory processing services increased between two and three times as fast as the demand for farm food products during the period studied. (See September 1964 Farm Index.)

FRESH GRAPEFRUIT PACKAGED AND LABELED INDIAN RIVER—A SALES TEST. S. E. Brown and E. C. Pape, Marketing Economics Division. ERS-212.

Fresh grapefruit packaged in units of six produced substantially higher sales than grapefruit displayed loose in tests conducted in supermarkets in the Paterson, New Jersey area during the spring of 1964. (See February 1965 Farm Index.)

recent publications

The publications listed here are issued by the Economic Research Service and cooperatively by the state universities and colleges. Unless otherwise noted, reports listed here and under Sources *are published by ERS. Single copies are available free from the Division of Information, OMS, U.S. Department of Agriculture, Washington, D.C. 20250. State publications (descriptions below include name of experiment station or university after title) may be obtained from the issuing agencies of the respective states.*

THE MICHIGAN FARM CREDIT PANEL: A HISTORY OF CAPITAL ACCUMULATION. J. R. Brake, Michigan State University Agricultural Experiment Station, and M. E. Wirth, Farm Production Economics Division. Mich. State Univ. Agr. Expt. Sta. Res. Rpt. 25.

The purpose of this report was to present a sketch of the capital accumulation process on survey farms. Of the total sample, 97 per cent used credit of some sort at some time in their farm businesses. (See February 1965 Farm Index.)

SELECTED CHARACTERISTICS OF NORTH DAKOTA FARMS. R. D. Krenz, Farm Production Economics Division, in cooperation with the North Dakota Agricultural Experiment Station. N.D. Agr. Expt. Sta. Agr. Econ. Rpt. 38.

This report presents selected characteristics of the average farm in each of nine soil-climatic areas within the state.

PRODUCTION CONTROL ALTERNATIVES: THEIR EFFECT ON WASHINGTON STATE WHEAT FARMS. W. R. Butcher, H. A. Gilbert and O. L. Brough, Jr., Washington Agricultural Experiment Station in cooperation with the Farm Production Economics Division. Wash. Agr. Expt. Sta. Bul. 656.

This report discusses the effects of six alternative wheat output control and price support programs upon production and net returns.

ECONOMIC PROBLEMS IN GREAT PLAINS RANCHING. Great Plains Technical Research Committee, GP-2, in cooperation with the Farm Production Economics Division. Mont. Agr. Expt. Sta. Misc. Pub. 6.

This publication is a collection of nine papers presented at the 1962 Ranching Symposium in Montana. The symposium was conducted as part of a regional research study of the problems involved in operating dryland farms in the Great Plains.

WATERSHED PROGRAM EVALUATION: HONEY CREEK, IOWA. Resource Development Economics Division in cooperation with the Iowa State Conservation Office and the Soil Conservation Service. ERS-204.

Annual benefits from an improvement project on Honey Creek Watershed in Iowa averaged $20,260 between 1955 and 1960. (See August 1964 Farm Index.)

TRUCK CROP PRODUCTION PRACTICES—ERIE COUNTY, NEW YORK —LABOR, POWER AND MATERIALS BY OPERATION. E. E. Gavett, Farm Production Economics Division. ERS-207.

Erie County is one of the leading vegetable producing counties in New York. In 1959, Erie ranked first in acres of vegetables harvested and third in value of vegetable sales.

TRUCK CROP PRODUCTION PRACTICES—BERRIEN AND VAN BUREN COUNTIES, MICHIGAN, 1959—LABOR, POWER, AND MATERIALS BY OPERATION. E. E. Gavett, Farm Production Economics Division. ERS-206.

This report presents information on the production and harvesting of six fruit and vegetable crops grown for the fresh market and three grown for processing. (See page 11, this issue.)

ALTERNATIVE MARKETS FOR CATTLE HIDE TRIM. F. J. Poats and J. W. Thompson, Marketing Economics Division. ERS-217.

An evaluation of alternative markets for segmented cattle hides indicates that fresh hide trimmings have a value of about two cents a pound if they are converted into edible collagen or rendered into feed and oil by a new process. (See January 1965 Farm Index.)

ECONOMICS OF SEGMENTING CATTLE HIDES. J. W. Thompson and F. J. Poats, Marketing Economics Division. ERS-215.

An analysis of new trimming practices indicates that the removal of bellies, heads and shoulders from hides prior to tanning is economically advantageous to all segments of the leather industry. (See February 1965 Farm Index.)

CHARACTERISITICS OF FARM MORTGAGES RECORDED JANUARY 1 THROUGH MARCH 31, 1963. V. E. Eitel, Farm Production Economics Division. ERS-218.

Farm mortgages recorded by the principal lender groups in the first quarter of 1963 averaged $14,320 (30 per cent larger than in the same period two years earlier).

THE FEDERAL DATE MARKETING ORDER — ACTIVITIES AND ACCOMPLISHMENTS. C. C. Dennis, Marketing Economics Division. ERS-214.

The federal date marketing order appears to have been successful in improving the farm price. (See March 1965 Farm Index.)

THE DOMESTIC TREE NUT INDUSTRIES—AN ECONOMIC APPRAISAL. J. V. Powell, Marketing Economics Division. AER-62.

The growth of the tree nut industries has been rapid since the early 1900s. From 1930 to 1963, almond production increased 389 per cent and pecans about 400 per cent. (See December 1964 Farm Index.)

THE FEDERAL RAISIN MARKETING ORDER. N. T. Pritchard, Marketing Economics Division. ERS-198.

This report outlines the immediate and practical courses of action the raisin industry might take to improve its economic position by means of the Federal Raisin Marketing Order. (See September 1964 Farm Index.)

NEW ENGLAND FARM VACATION BUSINESSES — CHARACTERISTICS AND OWNERS' EXPERIENCES. J. M. Davis, Resource Development Economics Division. AER-60.

This report relates the experiences, advice and comments of New England families operating vacation farms which could be useful in helping other farmers decide whether to start farm vacation businesses. (See November 1964 Farm Index.)

Numbers in parentheses at end of stories refer to sources listed below:

1. F. T. Cooke, Jr. and A. M. Heagler, An Economic Appraisal of Skip-Row Planting of Cotton in the Yazoo-Mississippi Delta, Miss. State Univ. Agr. Expt. Sta. (P*) ; 2. P. E. LaFerney, R. A. Mullikin and W. E. Chapman, The Effects of Defoliation, Harvesting, and Ginning Practices on Micronaire Reading, Fiber Properties, Manufacturing Performance, and Product Quality of El Paso Area Cotton, Season 1960-61, MRR-690 (P); 3. M. M. Lindsey, The Effect of Harvesting Conditions on Cotton Quality in the Yazoo-Mississippi Delta, Miss. State Univ. Agr. Expt. Sta. (P*); 4. C. H. Wittman and J. R. Donald, "Seasonal Adjustments, Cyclical Movements, and Trends in Consumption of Cotton and Man-Made Staple Fibers," Cotton Situa., CS-215 (P) ; 5. SRS, Crop Production, Mar. 19, '65, (P); 6. E. L. Langsford, Cotton Production in the Mid-South and the Irrigated West (S) ; 7. Wheat Situation, WS-191 (P) ; 8. B. L. French, Linear Programing (S); 9. E. E. Gavett, Truck Crop Production Practices—Berrien and Van Buren Counties, Michigan, 1959, ERS-206 (P); 10. E. F. Hodges, Supplement for 1964 to Livestock Feed Relationships, 1909-1963, Statis. Bul. 337 (P); 11. H. A. Steele and W. A. Green, Management of Water Resources for Regional Development (S) ; 12. E. G. Youmans and F. C. Carpenter, Health Expectations for Old Age (S) ; 13. C. L. Beale, J. C. Hudson and V. J. Banks, Characteristics of the U.S. Population by Farm and Nonfarm Origin, AER-66 (P); 14. H. O. Doty, Jr., Present and Future Markets for Inedible Tallow and Meat Meal (S) ; 15. L. D. Howell, The American Textile Industry: Competition—Structure—Facilities—Costs, AER-58 (P); 16. R. E. Olson, Economics of Potato Utilization (S) ; 17. A. C. Manchester, The Nature of Competition in Fluid Milk Markets—Market Organization and Concentration, AER-67 (P); 18. Wool Situation, TWS-70 (P) ; 19. W. K. Trotter, Analysis of Economic Status of Air Classification in the Milling Industry (S); 20. T. Q. Hutchinson (SM); 21. M. R. Larsen, The Agricultural Economy of North Vietnam (M) ; 22. Wheat Situation, WS-191 (P) ; 23. D. H. Rahe, "Exports to Europe and Asia and Imports from Latin America Expanded U.S. Foreign Agricultural Trade in 1963-64 Over 1962-63," For. Agr. Trade, Mar.-Apr. '65 (P) ; 24. Foreign Regional Analysis Division (SM) ; 25. J. W. Thompson (SM); 26. National Food Situation, NFS-111 (P); 27. L. H. Shaw and D. D. Durost, Sources of Yield Change (M).

Speech (S); published report (P) ; unpublished manuscript (M) ; special material (SM). * State publications may be obtained only by writing to the experiment station or university cited.

Words on Weather

What can farmers do about the weather? The obvious answer is "not too much!" However, a recent study of corn yields in the Corn Belt during 1929-62 indicates that farmers were able to offset the effects of weather to some extent with the use of improved producion practices. Their adoption of hybrid seed, high analysis and liquid nitrogen fertilizers along with better methods of planting and cultivating corn appears to have made the fluctuations in midwestern corn yields less pronounced, as well as more than doubling output per acre.

After adjusting Corn Belt corn yields for the effects of weather, specialists found that yields rose from around 30 bushels to the acre in 1929 to over 70 bushels in 1962. Although the rise averaged 1.3 bushel annually, the actual gains are patterned like stair-steps.

In 1929, when the study began, yields were relatively steady. From 1933 to 1948, farmers changed to hybrids and yields rose rapidly, accounting for 20 bushels of the overall gain. From 1948 into the middle fifties, yields were rather stable again until farmers began using liquid nitrogen fertilizer which added approximately 15 bushels. Then, they followed up with higher planting rates and improved hybrids, both adopted at about the same time.

Although the weather was relatively favorable during the latter part of the three decades, its average effect on the year-to-year change in yields was only —0.4 bushel. So, in the long run, the effects of favorable and unfavorable weather offset each other. *(27)*

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